MULTIMEDIA UNIVERSITY

STUDENT ID

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2018/2019

TIS1101 – Database Fundamentals

(All sections / Groups)

15 OCTOBER 2018
9.00 a.m - 11.00 a.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 5 pages, including the cover page, with FOUR questions only.

2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answers in the answer booklet provided.

Answer ALL Questions

QUESTION 1

Draw a complete entity-relationship diagram (ERD) using Crow's Foot notation based on the following business rules:

- An author may write many books. A book is written by many authors.
- A book falls under one of two categories: fiction and nonfiction. Fiction book refers to plot, settings and characters created from the imagination while nonfiction book refers to stories based on actual events.
- A warehouse stores many books. A warehouse may be categorized into two types either public or private.
- Fiction books are stored in public warehouse while nonfiction books are stored in private warehouse.

The primary key and foreign key (if any) must be included for every entity, other attributes are optional. The cardinality, connectivity and relationship strength in your ERD must be denoted accordingly.

[10 marks]

Continued .....

QUESTION 2

Answer questions (a) to (d) based on the following relational schema about actors, movies and roles played. The primary key for each relation is in bold and foreign key is underlined.

ACTOR (**ActorID**, Name, Remarks, YearsInIndustry)

MOVIE (**MovieID**, Title, DirectorName, YearDirected, Budget, LocationID)

ROLE (**ActorID**, **CharacterName**, **MovieID**)

LOCATION (**LocationID**, Country, State)

Note: ROLE relation stores information about which actor has acted in which role (character) and in which movie. The ActorID and MovieID are foreign keys to ACTOR and MOVIE tables respectively. All the attributes in the ROLE relation make up the keys since it is possible for an actor to play multiple roles in a movie.

(a) Assume that ACTOR and MOVIE tables have been created, write the SQL statement to create the ROLE table. You may assume any suitable data types for the attributes in the table.

[3 marks]

(b) Write a SQL statement that returns the names of actors who have acted in a character other than 'comedian' in movies directed by 'Loius'.

[2 marks]

(c) Write a SQL statement to list the number of movies directed by each director from year 2011 to year 2018.

[2 marks]

(d) Write a SQL statement to display the names of actors who have performed in at least two different movies directed by a director whose name contains the word 'Kent'.

[3 marks]

Continued .....

QUESTION 3

Answer questions (a) – (c) based on the following table:

CarID	Type	Make	Model	TechnicianID	TechnicianName	ServiceCharge	ServiceDate
AAA99	Sedan	Toyota	Camry	T1	Will	180	20-Jan-2018
WWW1	SUV	Honda	CR-V	T2	King	200	20-Jan-2018
WWW1	SUV	Honda	CR-V	T1	Will	200	30-Jul-2018
AAA99	Sedan	Toyota	Camry	T3	Wayne	180	31-Jul-2018
CC4	Hybrid	Kia	Optima	T3	Wayne	250	14-Feb-2018
W7890	Hybrid	Honda	Jazz	T1	Will	250	10-Aug-2018
ABC10	SUV	Mazda	CX-5	T3	Wayne	200	19-Apr-2018
TT22	Sedan	VW	Jetta	T2	King	180	16-Jun-2018

(a) Draw the dependency diagram in 1NF for the above table. Show all the dependencies and underline the primary key(s).

[4 marks]

(b) Based on your solution in Question 3(a), normalize the dependency diagram to 2NF. Draw the resulting dependency diagram and underline the primary key(s).

[3 marks]

(c) Based on your solution in Question 3(b), normalize the dependency diagram to 3NF. Draw the resulting dependency diagram and underline the primary key(s).

[3 marks]

Continued .....

QUESTION 4

(a) In your opinion, why do you think it is important to conduct a database initial study before designing a database?

[3 marks]

(b) There are FOUR characteristics of a data warehouse. Explain each one of them.

[4 marks]

(c) Explain the THREE types of cloud implementation.

[3 marks]

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